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ABSTRACT

One of nine brief guides on using computer technology, this guide is directed to parents of children with disabilities and provides an overview of computer use with handicapped children and suggestions for ways parents can learn more about the potential of technology to aid their children. Instructional software for classroom or home use generally falls into four categories: drill and practice; tutorials; simulations; and games. Tool software (e.g., word processing, database, and graphic editors is another option that is proving very useful for computer users of all ages. Principles for selecting a computer include developing a profile of the child's learning needs which will take into account the nature and degree of severity of his/her disability and also the child's age. Specific concerns when selecting computer equipment include ensuring that the software programs chosen will run on the computer to be used, presence of sufficient memory, compatibility of adaptive devices, printer features, and cost. Parents are encouraged to read about computers, talk to the child's teacher, and join a local computer user group. Also recommended is contacting the local chapter of the appropriate disability organization and obtaining information on software, hardware, assistive technology, and possible funding help. Four readings, eight organizational resources, four periodicals, and three software resource guides are listed. (DB)

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Center for Special Education Technology

Tech Use Guide

Using Computer Technology

U.S. DEPARTMENT OF EDUCATION
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Guide for Parents

Computers and other related technologies have expanded and enriched the lives of many children with disabilities, giving them new options for living and learning not imagined a decade ago. Today, an electronic communication aid can give a "voice" to a nonverbal child. A child with a learning disability may master math facts using a computer game. For a child with a visual impairment, instructional material can be enlarged on the computer screen to allow independent learning. A child with a physical disability can use the computer to control his environment at home or in the classroom.

The versatile microcomputer is central in each of these applications. It can be used in any number of different ways to support learning at home and at school. Generally, one has only to change the software to change the content of computer-based learning. However, for some children, it may be necessary to modify the standard hardware—the keyboard, the monitor, or the printer—before the computer becomes an efficient learning tool.

With these "high tech" options come many decisions for the consumer, from deciding if and when to use a computer to what hardware and software to purchase. The vast array of products on the market doesn't make the decision an easy one. Perhaps the best answer is to become an informed consumer. Learn about the many resources available to parents and educators and use them for the information you need to reach your decision. This guide provides a brief overview of computer use with handicapped children and suggests ways in which interested parents can learn more about the potential of technology.

Computers for Instructional Use

Many of the computers purchased each year are bought for use in the home and well over 50% of home computer owners report that the major reason for buying a computer is for educational purposes. Exactly how computers are used depends primarily on the software selected. Depending on the design and the content, software can present new skills or concepts, reinforce previously learned skills, or require the learner to apply skills to a task or problem. Instructional software for classroom or home use generally falls into four categories: drill and practice, tutorial, simulations, and games. Tool software, such as word processing programs, is another option that is proving very useful for computer users of all ages.

Drill and Practice. By far the most available educational format, drill and practice software does exactly what it says. It allows the child to practice a previously learned skill. The content is usually structured, focusing on a specific sequence or kind of skill building. For many special education students, drill and practice activities are very important for mastering basic skills. This kind of software can reinforce learning that takes place in school.

Tutorials. These programs introduce new skills or concepts in a step-by-step approach. The child may have learned related skills, but the content presented is essentially new. Because the instructional content is new, it is important to supervise or guide the child through a tutorial. If the learner is not supervised, the information could be misunderstood or learned incorrectly.

Simulations. Simulations are a type of problem-solving software. The learner applies learned skills, rules, and information to a real life situation and draws conclusions to solve a problem. Generally, there is no one correct answer but rather a variety of different answers each with different consequences. A well designed simulation can promote critical thinking and problem solving skills.

Games. Many computer programs use a game format to reinforce skills or present problem solving situations. Arcade-style games are often drill and practice activities where the learner practices skills by competing with the program in which facts or problems are presented.

Tool Software. Word processing, database, and graphic editors are all examples of tool software. Unlike other programs, tool software is content-free. It provides a framework for writing, creating files, or drawing. The user specifies the content. To use a word processing or database program, the learner must become familiar with a set of commands which can then be applied to a variety of activities. Since tool software is content free, it can be used by family members for different purposes.

Many possibilities exist for computer learning at home. According to a recent government study there are over 10,000 software products on the market today that are intended for educational use in school or at home.

Computers for Access to Learning

Before you make a selection as to which brand of computer to buy, you need to develop a profile of your

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child's learning needs. Disabilities may range from mild to severe. Your selection of a computer and software will depend on your child's specific needs.

If your child is physically disabled, determine if the computer can be modified to make it easier for the child to interact with the computer. A modification may allow the child to bypass the standard computer keyboard and activate software by just touching the screen, using a single switch, or talking to the computer.

If your child is visually impaired, you may need to look for computers and software with voice output (that means the computer will talk to you), large print screens (everything on the computer screen is magnified), and/or braille output.

For a child with learning disabilities and language delays, a combination of speech synthesis and alternative inputs may be necessary. For a child with behavior and attention disorders, timing is important. You may want to look for a computer that can load programs rapidly from the disk.

The age of your child will also influence your decision. Some computers are easier to use than others. Also, if your child is older, you may want to introduce him or her to a computer that may be used in the business world. If you want your child to operate the computer independently, make sure that you select a system that is easy to master or one that the child is familiar with, perhaps the same one that the child uses in school.

Selecting Computer Equipment

Given the number of computers that are available today and the different types, it is almost impossible to do a comparison. Generally, though, one or two factors tend to influence your decision to purchase a particular brand. These factors might include specific software compatibility, cost, or compatibility with other computers in the school.

Some questions to ask when considering a computer system are:

- Do the software programs you plan to use run on this computer?
- Is the computer's memory sufficient to operate the software you plan to use?
- Can the memory be expanded?
- Can adaptive devices be used with the computer?
- Is a color monitor necessary?
- Does the software you plan to use work with the printer?
- Can the printer produce graphics?
- How much will the total computer system cost (including monitor, printer, disk drives)?

A complete computer system will include the computer (the central processing unit—CPU), a monitor, disk drive(s), and a printer. These pieces may or may not come as a package. When using a computer with children, a color monitor is recommended since most children's programs are designed to work with a color monitor. A printer is also recommended. Children love to make print copies of their work. If the computer will be used for word processing, you need a printer to print out a copy of your child's work.

If you can't afford all of the options initially or prefer to purchase only part of a system, plan ahead and make sure whatever you purchase can be expanded at a future date. You will want a computer that can be useful in a number of situations and can be enhanced to suit changing needs.

Becoming Informed

Technology is an investment. Therefore, consumers should become more informed about the potential and the limitations of technology. Fortunately, there is a wealth of information that parents and teachers can access, allowing them to make informed choices about the products they purchase and the services they select.

Where to Begin

If you are interested in using computers or assistive technology with your child but do not know where to begin, start by reading general information on the subject. Many books and periodicals are available, some of which are specific to special needs. Computer periodicals are available in most book stores and also in your neighborhood grocery store.

Print information alone will not be enough to help you with your technology decisions. You may need to contact agencies and organizations that provide special services. To do this, first become aware of resources that exist in your community. Local resources can supply personalized assistance to fit technology to your child.

Perhaps the most important community resource is the school. Your child's teacher can often help you assess the potential of using technology at home given your child's needs. The teacher may also be able to guide you in selecting appropriate software for your child. Some districts allow parents to borrow computer equipment for home use.

Another local resource is a computer user group. User groups can provide valuable information about the use of software and hardware. Technical questions can be answered by members who are experienced with both. Check with your local computer dealer or look in the telephone directory to find a user group in your area. Computer manufacturers may also know of a local user group.

The Apple Computer Special Education Alliance, a national network of community-based resource centers, now has centers located throughout the country. Parents are welcomed for hands-on demonstrations of different hardware and software and may also receive assistance in using technology with their child.

Technology Use

If you are looking for information about using technology with a child with a specific disability, try contacting

the local chapter of the disability organization serving that population. For example, if your child has a learning disability, contact the local Association for Children and Adults with Learning Disabilities (ACLD).

Other organizations, such as the Easter Seal Society and the United Cerebral Palsy Association, often provide direct services to families and to local schools in the use of technology. The resource inventory for your state will serve to get you started in your search for local technology services. If you do not have a resource inventory for your state, contact the Center and request a copy.

Software Information

Your local public library can be a gold mine for information on computer software. Some libraries set up mini computer labs for the public to use.

Another source for software information is your local computer store [illegible]nal chains, such as B. Dalton and Egghead, carry a [illegible] selection of instructional software for all ages. Some so[illegible]ware companies cater to the home market. Scholastic and Broderbund issue home market catalogs so you can shop by mail.

Some parents may be able to contact special software preview centers operated by school districts or universities. Since most of these preview centers cater to teachers, call first to make sure parents are welcome.

Hardware Information

Hardware information may be harder to find locally. Computer dealers that sell computer systems can usually be found in most cities. If you are located in an area without a computer dealer or vendor, call the main headquarters office to see where the nearest dealer is located. If you decide to purchase hardware over the phone or by mail, make sure the company has a good reputation and be sure to check their return policy. Remember, it is always a good idea to try equipment before you buy it.

Assistive Technology

If you don't know what assistive equipment is needed, local hospitals and community rehabilitation or vocational centers may be active in designing and fitting assistive devices to complement your child's capabilities. Some states have established centers to provide information about particular devices. For more information about this topic, request the Tech Use Guide on Computer Access from the Center.

Funding

Finding funding for technology devices requires an individualized approach. To begin your search, check the resources that are available to you locally, such as the Lions or Kiwanis Clubs, and religious organizations.

Nationally, the Easter Seal Society, in connection with IBM, has an assistance project that allows eligible persons with disabilities to purchase computer systems at discount.

With new federal legislation and more national interest in technology additional funding sources may soon emerge.

To really make technology work for you and your child, it is important to become an informed consumer. Use the abundant resources available: read about technology, talk to others who use it, and try out various technology options before you buy.

Readings

Handbook of Microcomputers in Special Education (1984), edited by Michael Behrmann, College Hill Press, 4284 41st Street, San Diego, CA 92015.

Making an Exceptional Difference: Enhancing the Impact of Microcomputer Technology on Children with Disabilities (1987), edited by Harvey Pressman, Exceptional Parent, 1170 Commonwealth Avenue, Third Floor, Boston, MA 02134.

Microcomputer Resource Book for Special Education (1984), by Dolores Hagen, Closing The Gap, P.O. Box 68, Henderson, MN 56044.

Personal Computers and Special Needs (1984), by Frank Bowe, Sybex, Inc., 2344 Sixth Street, Berkeley, CA 94710.

Resources

The American Speech-Language-Hearing Association (ASHA), 10801 Rockville Pike, Rockville, MD 20852, 800-638-8255.

Association for Children with Learning Disabilities (ACLD), 4156 Library Road, Pittsburgh, PA 15234, 412-341-1515.

The Association for Persons with Severe Handicaps (TASH), 7010 Roosevelt Way NE, Seattle, WA 98115, 206-523-8446.

Association for Retarded Citizens (ARC), 2501 Avenue J, P.O. Box 6109, Arlington, TX 76006, 817-640-0204.

The Council for Exceptional Children (CEC), 1920 Association Drive, Reston, VA 22091, 703-620-3660.

National Easter Seal Society, 2023 West Ogden Avenue, Chicago, IL 60612, 312-243-8400.

National Information Center for Handicapped Children and Youth (NICHCY), P.O. Box 1492, Washington, DC 20013.

United Cerebral Palsy Association (UCPA), 66 East 34th Street, New York, NY 10016, 212-481-6300, 800-872-1827.

Periodicals

A+: The Independent Guide for Apple Computing, P.O. Box 2964, Boulder, CO 80322.

Closing The Gap, P.O. Box 68, Henderson, MN 56044.

Exceptional Parent, 1170 Commonwealth Avenue, Third Floor, Boston, MA 02134.

Exceptional Parent, 1170 Commonwealth Avenue, Third Floor, Boston, MA 02134.

Personal Computing, 10 Holland Drive, Hasbrouck Heights, NJ 07604.

Software Resource List

Apple Computer Resources in Special Education and Rehabilitation, DLM, Inc., One DLM Park, Allen, TX 75002, 800-527-4747. This resource for professionals in the field of special education is a comprehensive guide to Apple compatible hardware and software products for disabled individuals.

Connections, Apple Computer, Inc., Office of Special Education, 20525 Mariani Avenue, Cupertino, CA 95014, 408-996-1010. Connections is a guide to computer resources for disabled children and adults. It provides a list of product vendors who may be able to help people with the following disabilities: physical, visual, learning, speech, and hearing. It also lists organizations and publications dealing with physical, visual, learning, and speech and hearing disabilities.

Special Times, Cambridge Development Laboratory, Inc. P.O. Box 605, Newton Lower Falls, MA 02162, 800-637-0047. Special Times is a free catalog of software programs that have been proven with students with learning disabilities. The catalog includes all subject areas, readiness skills, and teaching tools from over 50 different publishers. It also includes guidelines for software use with students with learning disabilities and a learning skills matrix.

The information in this **Tech Use Guide** is in the public domain. Readers are encouraged to copy and share it, but please credit the Center for Special Education Technology. Please notify the Center of large quantity distributions.

Additional **Tech Use Guides** on the following topics are available from the Center upon request:

- Guide for Teachers
- Technology for Work, Home, and Leisure
- Computer Access
- Selecting Software
- Selecting Hardware
- Preschool Children
- Learning Disabilities
- Hearing Impairments
- Physical Disabilities
- Visual Impairments
- Telecommunication Networks
- Augmentation Communication

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